

## MAKING CLOSED END TUBES FOR SURGICAL INSTRUMENTS

### Abstract

Techniques are described for making one-piece tubes for surgical instruments in which an inner tube that carries a cutting implement is disposed for movement within an outer tube having a cutting window that exposes the cutting implement to tissue. Swaging is performed to close an end of a tubular member that is to serve as either the inner tube or the outer tube. Other processing steps are also performed. For example, a selected amount of a protrusion formed by the swaging is cut away, the tube material is fused together at a seam formed by the swaging, and the closed distal end of the tubular member is formed into a selected shape. For example, the selected shape is rounded so that the distal end defines convex (e.g., substantially hemispherical) interior and exterior distal surfaces. This renders the tube suitable for use in full-radius surgical instruments. Alternatively, the selected shape is flattened so that the distal end defines flattened interior and exterior distal surfaces. In this case, the tube can be used in end cutting surgical instruments.